

PATENT ABSTRACTS OF JAPAN

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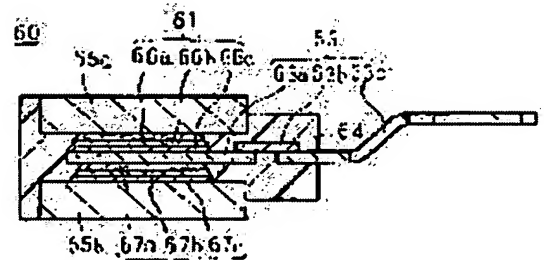
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(54) ALTERNATOR FOR VEHICLE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain an alternator for vehicle which controls temperature rise of elements by effectively radiating heat generated in unidirectional conductive elements of a rectifying device, saves the assembling steps by saving the number of parts of the rectifying device, and also controls damage to the elements at the time of assembling the rectifying device.

SOLUTION: This alternator for vehicle comprises a diode package 60, a positive side unidirectional conductive element 61, a negative side unidirectional conductive element 62 of which cathode surface is coupled to the anode surface of the positive side unidirectional conductive element 61 via an AC input terminal 63, a positive side base 65a formed of a metal plate coupled to the cathode surface of the positive side unidirectional conductive element 61, a negative side base 65b consisting of a metal plate coupled to the anode surface of the negative side unidirectional conductive element 62, and an insulation resin 64 for molding the positive side and negative side unidirectional conductive elements 61, 62.



60 : ダイオードパッケージ 65a : 正極側ベース
61 : 正極側一方向性導電素子 65b : 負極側ベース
62 : 負極側一方向性導電素子 66a, 67a : N型半導体
63 : 交流入力端子 66b, 67b : P型半導体
64 : 絶縁樹脂 68a, 68b : P型半導体

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the structure of the rectifier applied to especially the AC generator for cars about the AC generator for cars carried in a passenger car, a truck, etc.

[0002]

[Description of the Prior Art] The sectional view showing the configuration of the conventional AC generator for cars with which drawing 21 was indicated by JP,8-182279,A, the bottom view showing the rectifier with which drawing 22 is carried in the conventional AC generator for cars, drawing where drawing 23 explains the assembly procedure of the stator and rectifier in the conventional AC generator for cars, and drawing 24 are the circuit diagrams showing an example of the circuit in the conventional AC generator for cars.

[0003] It sets to drawing 21 , and it is equipped with the conventional AC generator for cars free [rotation] through a shaft 6 in the case 3 where the rotator 7 of the Randle mold consisted of the drive side bearing brackets 1 and commutator side bearing brackets 2 made from aluminum, and it fixes to the internal surface of a case 3, and it is constituted so that a stator 8 may cover the periphery side of a rotator 7. The shaft 6 is supported by the drive side bearing bracket 1 and the commutator side bearing bracket 2 pivotable through the bearing 14a and 14b of a pair. A pulley 4 fixes at the end of this shaft 6, and engine running torque can be transmitted now to a shaft 6 through a belt (not shown). And the slip ring 9 which supplies a current to a rotator 7 fixes to the other end of a shaft 6, and it is contained by the brush holder 11 arranged in the case 3 so that the brush 10 of a pair might **** to this slip ring 9. The heat sink 18 with which the voltage regulator 17 which adjusts the magnitude of the alternating voltage produced in the stator 8 was attached in the brush holder 11 is pasted. It connects with a stator 8 electrically and is equipped with the rectifier 12 which rectifies the alternating current produced in the stator 8 to a direct current in the case 3.

[0004] A rotator 7 is formed so that the rotator coil 13 which passes a current and generates magnetic flux, and this rotator coil 13 may be covered, and it consists of Randle mold field cores 20 and 21 of the pair in which a magnetic pole is formed of the magnetic flux generated with the rotator coil 13. Two or more protrusions of the pawl-like magnetic poles 22 and 23 were carried out in the conformed pitch on the periphery edge at the hoop direction, respectively, the field cores 20 and 21 of a pair are iron, they countered so that the pawl-like magnetic poles 22 and 23 might be engaged, and they have fixed at the shaft 6. And the axial flow fans 5a and 5b as a cooling means have fixed to the both-ends side of the shaft orientations of field cores 20 and 21, respectively. The stator 8 consists of a stator core 15 and a stator coil 16 which comes to wind lead wire around this stator core 15, and an alternating current produces in change of the magnetic flux from a rotator 7 with rotation of a rotator 7. And some lead wire wound around the stator core 15 extends to the both ends of the shaft orientations of the stator core 15, and it constitutes a front-side coil, 16f, a rear-side coil, and 16r. In addition, the stator coil 16 is the Y-globe type three phase coil constituted by carrying out Y connection of the three coils.

[0005] The rectifier 12 is equipped with a positive-electrode side and the negative-electrode side diodes 30a and 30b, and the positive-electrode side which supports Diodes 30a and 30b, respectively and the negative-electrode side cooling plates 31 and 32. A positive-electrode side and the negative-electrode side cooling plates 31 and 32 are projected by a shaft 6 and the right angle, and have two or

more radiation fins 31a and 32a of the shape of a straight line prolonged in parallel with a shaft 6. Positive-electrode side diode 30a sets predetermined spacing to the principal plane of the positive-electrode side cooling plate 31, i.e., the field in which radiation-fin 31a was prepared and the field of the opposite side, and is arranged in it by the single tier. And the plate-like base-electrode side of positive-electrode side diode 30a is connected to the principal plane of the positive-electrode side cooling plate 31 by soldering. Similarly, negative-electrode side diode 30b also sets predetermined spacing to the principal plane of the negative-electrode side cooling plate 32, and is arranged in the single tier. And the positive-electrode side cooling plate 31 and the negative-electrode side cooling plate 32 are together put so that the tooth back of each diodes 30a and 30b may counter in the direction of a path. Connection terminal 30al which makes the pair of positive-electrode side diode 30a and negative-electrode side diode 30b, and 30bl are pulled out in parallel with a shaft 6, and are summarized to connection terminal 33a of a circuit board 33, and one place, and solder connection is made with the outgoing lines 16a-16c of the stator coil 16 introduced by guide 34a of a dashboard 34, and 16n.

[0006] Here, as shown in the circuit diagram of drawing 24, it is outputted by 3 sets of diode bridges where a ripple current component consists of positive-electrode side diode 30a and negative-electrode side diode 30b through the neutral point when full wave rectification was carried out by 3 sets of diode bridges where the three-phase-alternating-current electrical potential difference outputted from each outgoing end of the stator coil 16 consists of positive-electrode side diode 30a and negative-electrode side diode 30b at, and Y connection of the stator coil 16 was carried out, and the output current improves. Then, the rectifier 12 is equipped with a four positive-electrodes each side and the negative-electrode side diodes 30a and 30b. Positive-electrode side diode 30a is the thing of the package type of an abbreviation rectangular parallelepiped by which the plate-like electrode was prepared in the cathode side of a tropism flow component on the other hand, connection terminal 30al was prepared in the anode side of a tropism flow component on the other hand, and mold molding was carried out by resin in the whole. Negative-electrode side diode 30b is the thing of the package type of an abbreviation rectangular parallelepiped by which the plate-like electrode was prepared in the anode side of a tropism flow component on the other hand, connection terminal 30bl was prepared in the cathode side of a tropism flow component on the other hand, and mold molding was carried out by resin in the whole.

[0007] In addition, in the case of circuitry as shown in drawing 25, rectifier 12A will be equipped only with 3 sets of diode bridges which consist of positive-electrode side diode 30a and negative-electrode side diode 30b in order to carry out full wave rectification of the three-phase-alternating-current electrical potential difference outputted from each outgoing end of the stator coil 16, respectively.

[0008] Thus, in the constituted AC generator for cars, a current is supplied to the rotator coil 13 through a brush 10 and the slip ring 9 from a dc-battery (not shown), and magnetic flux is generated. The pawl-like magnetic pole 22 of one field core 20 is magnetized by N pole, and the pawl-like magnetic pole 23 of the field core 21 of another side is magnetized by this magnetic flux at the south pole. On the other hand, engine running torque is transmitted to a shaft 6 through a belt and a pulley 4, and a rotator 7 rotates. Then, rotating magnetic field are given to the stator coil 16, and electromotive force occurs in the stator coil 16. While the electromotive force of this alternating current is rectified by direct current through a rectifier 12, that magnitude is adjusted by the voltage regulator 17 and charged by the dc-battery.

[0009] In this AC generator for cars, the rotator coil 13, the stator coil 16, the rectifier 12, and the voltage regulator 17 are always exoergic during a generation of electrical energy. In the generator of rated-output-current 100 first class, there is a generating heating value of 60W, 500W, 120W, and 6W on the rotation point high in temperature, respectively. Then, in order to cool the heat generated by generation of electrical energy, the inhalation-of-air holes 1a and 2a and exhaust hole 1b, and 2b are prepared in the drive side bearing bracket 1 and the commutator side bearing bracket 2. As shown in drawing 21, more than one are prepared so that the inhalation-of-air holes 1a and 2a may counter the shaft-orientations side (end face) of both the brackets 1 and 2 with a rectifier 12 and a voltage regulator 17, and, specifically, two or more exhaust hole 1b and 2bs are prepared around axial-flow-fan 5a of the direction side of a path of both the brackets 1 and 2 (side face), and 5b

periphery section. So, in a front-side, as shown by the drawing 21 solid line arrow head, it absorbs in a case 3 through inhalation-of-air hole 1a, and subsequently to the centrifugal direction the open air is bent by axial-flow-fan 5a, cools the front-side coil and 16f of sections of the stator coil 16, and is discharged after that by rotation of axial-flow-fan 5a of a front-side outside from exhaust hole 1b. The open air is inhaled by rotation of axial-flow-fan of rear-side 5b in a case 3 through [as shown by the drawing 21 middle point line arrow head by the rear-side on the other hand] inhalation-of-air hole 2a, a rectifier 12 and a voltage regulator 17 are cooled, subsequently to the centrifugal direction it is bent by axial-flow-fan 5b, rear-side coil [of the stator coil 16] and section 16r is cooled, and it is discharged from exhaust hole 2b to the exterior after that.

[0010] Subsequently, the conventional rectifier using the cooling plate formed in abbreviation horseshoe shape is explained. The perspective view showing other conventional rectifiers with which drawing 26 thru/or drawing 28 R> 8 were indicated by JP,8-182279,A, for example, respectively, a front view and rear view, the important section sectional view showing the configuration of the rectifier with which drawing 29 is shown in drawing 26 , drawing 30 , and drawing 31 are the important section sectional views and important section front views showing the flow of the cooling style in the AC generator for cars carrying the rectifier shown in drawing 26 , respectively. In this conventional rectifier 12B, a positive-electrode side and the negative-electrode side cooling plates 35 and 36 are formed in horseshoe shape, respectively. And the positive-electrode side cooling plate 35 has two or more radiation-fin 35a prolonged in the tooth back, i.e., a principal plane, and the field of the opposite side at a radial. Positive-electrode side diode 30a sets predetermined spacing to the principal plane of the positive-electrode side cooling plate 35, and is arranged in the hoop direction by the single tier. And the plate-like base-electrode side of positive-electrode side diode 30a is connected to the principal plane of the positive-electrode side cooling plate 35 by soldering. Similarly, negative-electrode side diode 30b also sets predetermined spacing to the principal plane of the negative-electrode side cooling plate 36, and is arranged in the hoop direction by the single tier. And it is arranged at the same axle so that it may be located on the flat surface where a shaft 6 and a principal plane with mutual positive-electrode side cooling plate 35 and negative-electrode side cooling plate 36 cross at right angles. At this time, each diodes 30a and 30b counter in the direction of a path. And connection terminal 30al which makes the pair of positive-electrode side diode 30a and negative-electrode side diode 30b, and 30bl are pulled out in parallel with a shaft 6, and are summarized to connection terminal 37a of a circuit board 37, and one place, and solder connection is made with the outgoing lines 16a-16c of the stator coil 16, and 16n.

[0011] Thus, it sets to the AC generator for cars which carried constituted rectifier 12B. As shown by drawing 30 and the drawing 31 R>1 middle-point line arrow head, by rotation of axial-flow-fan 5b of a rear-side The open air is inhaled in a case 3 through inhalation-of-air hole 2a, and the positive-electrode side cooling plate 35 is hit. Along with the radiation-fin 35a, flow to a shaft 6 side, and it flows to a rotator 7 side through between a shaft 6 and the positive-electrode side cooling plates 35. Subsequently, it is bent by axial-flow-fan 5b in the centrifugal direction, the rear-side coil of the stator coil 16 and section 16r are cooled, and it is discharged outside from exhaust hole 2b after that.

[0012] Below, the conventional rectifier indicated by JP,7-231656,A is explained. The front view showing the conventional rectifier with which drawing 32 was indicated by JP,7-231656,A, and drawing 33 are the sectional views showing the rectifying device which constitutes the rectifier shown in drawing 32 . The receipt case 39 of closed-end cylinder-like metal [set to drawing 33 and / rectifying device / 38], On the other hand, the negative-electrode side with which the anode side was soldered to the inner pars basilaris ossis occipitalis of the receipt case 39 Tropism flow component 40b, On the other hand, the positive-electrode side with which the anode side was soldered to the cathode side of tropism flow component 40b on the other hand the negative-electrode side through the metal plate 41 Tropism flow component 40a, It has the connection terminal 42 soldered to the cathode side of tropism flow component 40a on the other hand the positive-electrode side, and the sealing agent 43 which consists of insulating resin with which it filled up in the receipt case 39. And knurling tool processing is performed to the peripheral face of the receipt case 39. Moreover, a plate 41 is pulled out from opening of the receipt case 39, and constitutes lead section 41a. Similarly, the connection terminal 42 is pulled out from opening of the receipt case 39, and constitutes lead section

42a. This rectifying device 38 constitutes the diode bridge which consists of tropism flow components 40a and 40b on the other hand a positive-electrode and negative-electrode side. In drawing 32 , as for the heat sink 44, three crevices are prepared for every predetermined spacing.

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CLAIMS

[Claim(s)]

[Claim 1] The rotator which fixed at the shaft supported to revolve by the case and was arranged in this case, In the AC generator for cars which has the stator arranged so that it might be supported by the above-mentioned case and the periphery of the above-mentioned rotator might be covered, and the rectifier cooled by the ventilation means which carries out a rotation drive with the above-mentioned rotator The positive-electrode side which the above-mentioned rectifier faced in principal planes, and was arranged with predetermined spacing, and a negative-electrode side cooling plate, It has the diode package arranged between the above-mentioned positive-electrode side and the negative-electrode side cooling plate. The above-mentioned diode package On the other hand, a cathode side the negative-electrode side which the alternating current input terminal was made to be placed between the anode sides of a tropism flow component the above-mentioned positive-electrode side on the other hand, and was joined to the tropism flow component on the other hand the positive-electrode side A tropism flow component, The positive-electrode side base which consists of a metal plate joined by the cathode side of a tropism flow component on the other hand the above-mentioned positive-electrode side, The negative-electrode side base which consists of a metal plate joined by the anode side of a tropism flow component on the other hand the above-mentioned negative-electrode side, On the other hand, a tropism flow component is laid underground an above-mentioned positive-electrode and negative-electrode side, and, on the other hand, the end face of the above-mentioned positive-electrode side base and the negative-electrode side base is exposed at least about the direction of a laminating of a tropism flow component an above-mentioned positive-electrode and negative-electrode side. It has insulating resin arranged so that the point of the above-mentioned alternating current input terminal might extend. And the above-mentioned diode package The AC generator for cars characterized by joining the end face of the above-mentioned positive-electrode side base to the principal plane of the above-mentioned positive-electrode side cooling plate, and joining the end face of the above-mentioned negative-electrode side base to the principal plane of the above-mentioned negative-electrode side cooling plate.

[Claim 2] On the other hand, a tropism flow component is arranged an above-mentioned positive-electrode [of 3 n-tuples by which the above-mentioned diode package made the above-mentioned alternating current input terminal intervene, and laminating unification was carried out, or 4 n-tuples], and negative-electrode side. It is joined to the one above-mentioned positive-electrode side base at which the cathode side of a tropism flow component extended in the array direction on the other hand the above-mentioned positive-electrode side of 3 n-tuples or 4 n-tuples. It is joined to the one above-mentioned negative-electrode side base at which the anode side of a tropism flow component extended in the array direction on the other hand the above-mentioned negative-electrode side of 3 n-tuples or 4 n-tuples. The AC generator for cars according to claim 1 characterized by laying a tropism flow component underground with the above-mentioned insulating resin, and on the other hand constituting it the above-mentioned positive-electrode [of 3 n-tuples or 4 n-tuples], and negative-electrode side.

[Claim 3] On the other hand, a tropism flow component is an AC generator for cars according to claim 1 or 2 characterized by consisting of diffusion mold components of the mesa mold which comes to carry out the PN junction of a P-type semiconductor and the N-type semiconductor using N type silicon, respectively an above-mentioned positive-electrode and negative-electrode side.

[Claim 4] On the other hand, the field of the side joined to a tropism flow component on the other hand the above-mentioned positive-electrode side of the above-mentioned positive-electrode side base is formed in the area beyond actual size to the area of the cathode side of a tropism flow component the above-mentioned positive-electrode side. On the other hand, the field of the side joined to a tropism flow component on the other hand the above-mentioned negative-electrode side of the above-mentioned negative-electrode side base is formed in the area beyond actual size to the area of the anode side of a tropism flow component the above-mentioned negative-electrode side. That the field which furthermore intervenes between tropism flow components on the other hand an above-mentioned positive-electrode [of the above-mentioned alternating current input terminal] and negative-electrode side is formed [the above-mentioned positive-electrode side] in the area beyond actual size to the area of the cathode side of a tropism flow component the above-mentioned anode side [of a tropism flow component], and negative-electrode side on the other hand The AC generator for cars according to claim 1 to 3 characterized by considering as the description.

[Claim 5] On the other hand, the plane-of-composition product of the above-mentioned positive-electrode side base and the above-mentioned positive-electrode side cooling plate is formed in the area beyond actual size to a plane-of-composition product with a tropism flow component the above-mentioned above-mentioned positive-electrode side base and positive-electrode side. The AC generator for cars according to claim 1 to 4 characterized by being characterized by on the other hand forming the plane-of-composition product of the above-mentioned negative-electrode side base and the above-mentioned negative-electrode side cooling plate in the area beyond actual size to a plane-of-composition product with a tropism flow component the above-mentioned above-mentioned negative-electrode side base and negative-electrode side.

[Claim 6] The above-mentioned alternating current input terminal is an AC generator for cars according to claim 1 to 5 characterized by taking splice structure.

[Claim 7] The AC generator for cars according to claim 1 to 6 characterized by the extension section from the above-mentioned insulating resin of the above-mentioned alternating current input terminal taking vent configuration structure.

[Claim 8] The AC generator for cars according to claim 1 to 7 characterized by joining the above-mentioned positive-electrode side, the above-mentioned negative-electrode side base and positive-electrode side, and the negative-electrode side cooling plate by solder.

[Claim 9] The AC generator for cars according to claim 8 characterized by producing the above-mentioned positive-electrode side and the negative-electrode side base by copper material, and performing nickel plating to the above-mentioned positive-electrode side, the above-mentioned positive-electrode side of the negative-electrode side base, and the plane of composition with a negative-electrode side cooling plate.

[Claim 10] The AC generator for cars according to claim 1 to 7 characterized by being what at least one side with the junction to the above-mentioned positive-electrode side base and the above-mentioned positive-electrode side cooling plate and junction to the above-mentioned negative-electrode side base and the above-mentioned negative-electrode side cooling plate depends on press fit.

[Claim 11] On the other hand, the base pressed fit is an AC generator for cars according to claim 10 characterized by extending from the above-mentioned insulating resin in the direction of a laminating of a tropism flow component, and the direction which intersects perpendicularly, and preparing the knurling tool configuration in the periphery lateral portion of the extension section an above-mentioned positive-electrode and negative-electrode side.

[Claim 12] The AC generator for cars according to claim 1 or 2 characterized by preparing the radiation fin in one end face of the above-mentioned positive-electrode side and the negative-electrode side base.

[Claim 13] The above-mentioned diode package is an AC generator for cars according to claim 1 or 2 characterized by being arranged so that the core of a tropism flow component may be located in an outer-diameter side from a fan-blade core on the other hand an above-mentioned positive-electrode [by which laminating unification was carried out], and negative-electrode side.

[Claim 14] The AC generator for cars according to claim 13 characterized by drilling a large number in this extension section so that the above-mentioned positive-electrode side and a negative-electrode

side cooling plate may extend in a way among the directions of a path and a ventilating hole may penetrate this extension section to the above-mentioned shaft and parallel.

[Claim 15] The above-mentioned diode package is an AC generator for cars given in either claim 1 characterized by preparing the inhalation-of-air hole in the part which is arranged so that the above-mentioned alternating current input terminal may turn to the direction outside of a path, and faces the above-mentioned alternating current input terminal of the above-mentioned case, claim 2, claim 13 and claim 14.

[Claim 16] The above-mentioned insulating resin is an AC generator for cars according to claim 1 or 2 characterized by containing the minerals baking object particle.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view showing the configuration of the diode package which constitutes the rectifier of the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 2] It is the perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 3] It is the bottom view showing the rectifier carried in the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 4] It is a perspective view explaining the junction approach of the diode package in the rectifier carried in the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 5] It is the decomposition perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 6] It is a perspective view explaining the assembly condition of the rectifier and stator concerning the gestalt 1 of implementation of this invention.

[Drawing 7] It is the circuit diagram of the AC generator for cars concerning the gestalt 1 of implementation of this invention.

[Drawing 8] It is a perspective view explaining the junction approach of the diode package in the rectifier carried in the AC generator for cars concerning the gestalt 2 of implementation of this invention.

[Drawing 9] It is a perspective view explaining the junction approach of the diode package in the rectifier carried in the AC generator for cars concerning the gestalt 3 of implementation of this invention.

[Drawing 10] It is a perspective view explaining the junction approach of the diode package in the rectifier carried in the AC generator for cars concerning the gestalt 4 of implementation of this invention.

[Drawing 11] It is the decomposition perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 5 of implementation of this invention.

[Drawing 12] It is the plan showing the rectifier carried in the AC generator for cars concerning the gestalt 5 of implementation of this invention.

[Drawing 13] It is the circuit diagram of the AC generator for cars concerning the gestalt 5 of implementation of this invention.

[Drawing 14] It is the decomposition perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 6 of implementation of this invention.

[Drawing 15] It is the decomposition perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 7 of implementation of this invention.

[Drawing 16] It is the front view which looked at the important section of the AC generator for cars concerning the gestalt 7 of implementation of this invention from the rear-side.

[Drawing 17] It is the sectional view showing the important section of the AC generator for cars concerning the gestalt 7 of implementation of this invention.

[Drawing 18] It is the decomposition perspective view showing the rectifier carried in the AC generator for cars concerning the gestalt 8 of implementation of this invention.

[Drawing 19] It is the front view which looked at the important section of the AC generator for cars concerning the gestalt 9 of implementation of this invention from the rear-side.

[Drawing 20] It is the sectional view showing the AC generator for cars concerning the gestalt 9 of implementation of this invention.

[Drawing 21] It is the sectional view showing the configuration of the conventional AC generator for cars.

[Drawing 22] It is the bottom view showing the rectifier carried in the conventional AC generator for cars.

[Drawing 23] It is drawing explaining the assembly procedure of the stator and rectifier in the conventional AC generator for cars.

[Drawing 24] It is the circuit diagram showing an example of the circuit in the conventional AC generator for cars.

[Drawing 25] It is the circuit diagram showing other examples of the circuit in the conventional AC generator for cars.

[Drawing 26] It is the perspective view showing other conventional rectifiers.

[Drawing 27] It is the front view showing other conventional rectifiers.

[Drawing 28] It is the rear view showing other conventional rectifiers.

[Drawing 29] It is the important section sectional view showing the configuration of other conventional rectifiers.

[Drawing 30] It is the important section sectional view showing the flow of the cooling style in the AC generator for cars carrying other conventional rectifiers.

[Drawing 31] It is the important section front view showing the flow of the cooling style in the AC generator for cars carrying other conventional rectifiers.

[Drawing 32] It is the front view showing the conventional rectifier of further others.

[Drawing 33] It is the sectional view showing the rectifying device which constitutes the conventional rectifier of further others.

[Drawing 34] It is the sectional view showing other conventional rectifiers.

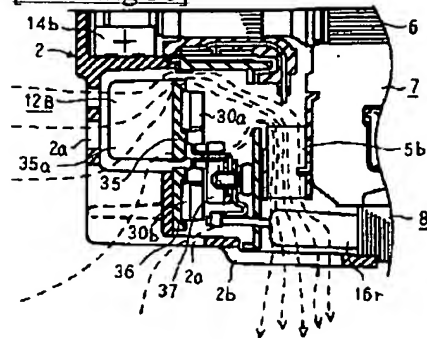
[Drawing 35] It is the sectional view showing the conventional rectifier of further others.

[Description of Notations]

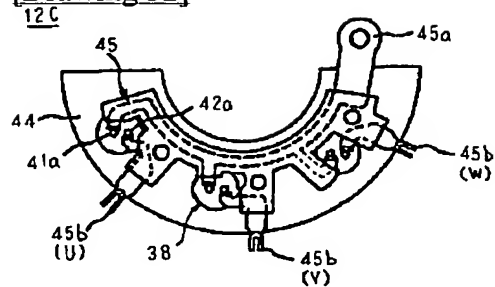
1 Drive Side Bearing Bracket, 2 Commutator Side Bearing Bracket, 2a Inhalation-of-Air Hole, 3 Case, 5b An axial flow fan, 6 A shaft, 7 Rotator, 8 A stator, 31, 80, 80A, 82, 82A Positive-electrode side cooling plate, 32, 32A, 32B, 81, 81A, 83, 83A Negative-electrode side cooling plate, 60, 60A, 60B, 60C A diode package, 61 On the other hand, a positive-electrode side Tropism flow component, 62 On the other hand, it is a tropism flow component and 63 a negative-electrode side. An alternating current input terminal, 64 Insulating resin, 65a, 70a, 71a, 72 The positive-electrode side base, 65b, 70b, 71b The negative-electrode side base, 66a, 67a An N-type semiconductor, 66b, 67b N type silicon, 66c, 67c A P-type semiconductor, 72a Radiation fin, 80b, 81b, 82b, 83b A ventilating hole, 90 Covering (case), 90a inhalation-of-air hole, 120, 130, 131 Rectifier.

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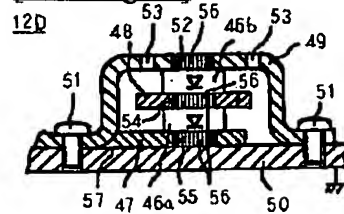
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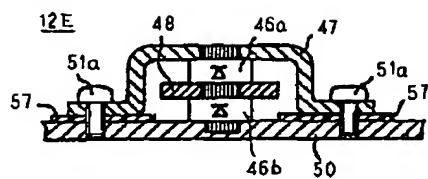
[Drawing 32]



[Drawing 34]



[Drawing 35]



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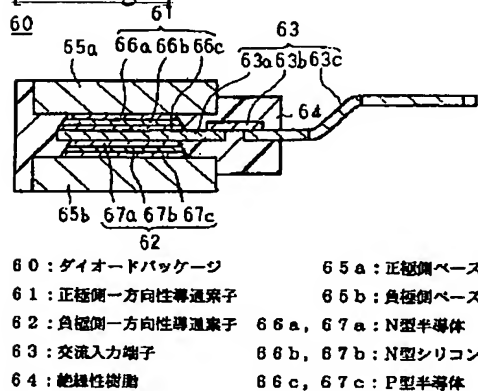
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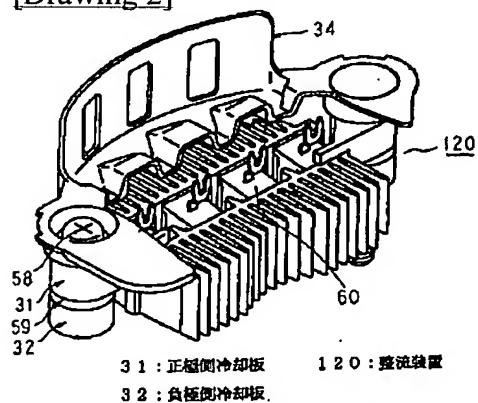
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

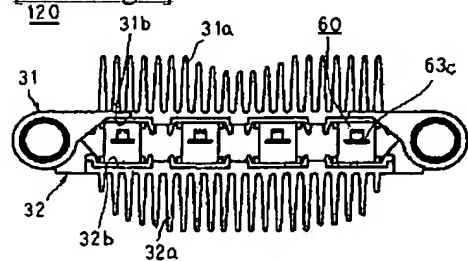
[Drawing 1]



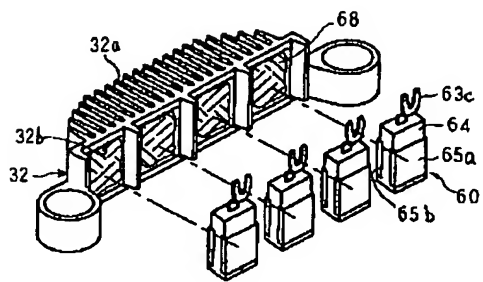
[Drawing 2]



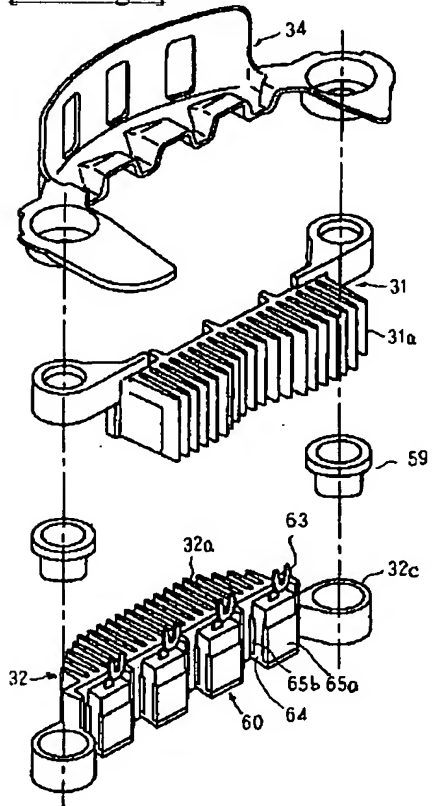
[Drawing 3]



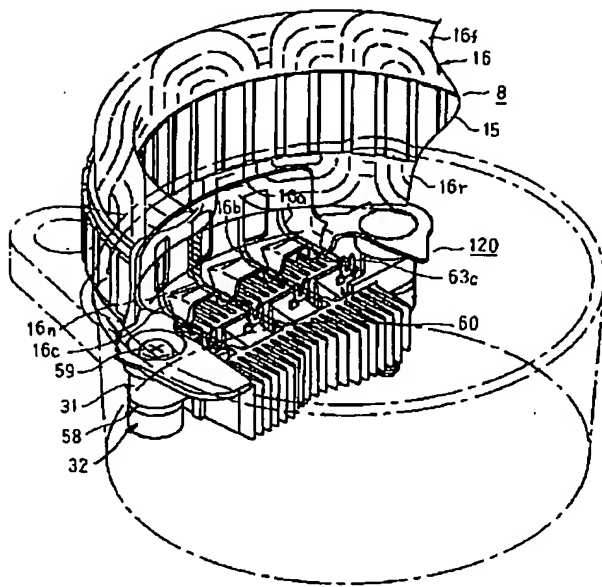
[Drawing 4]



[Drawing 5]

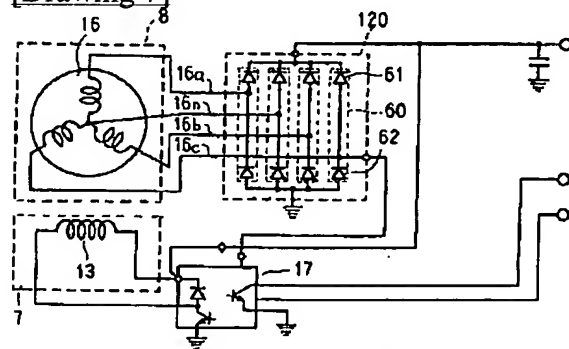


[Drawing 6]



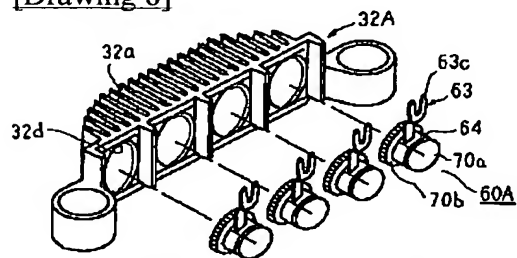
8 : 固定子

[Drawing 7]



7 : 回転子

[Drawing 8]



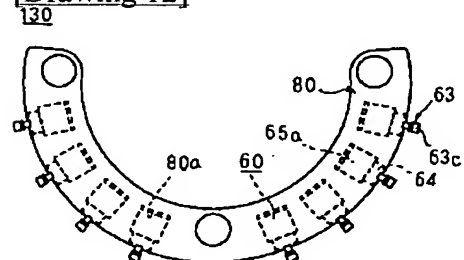
32A : 負極側冷却板

70a : 正極側ベース

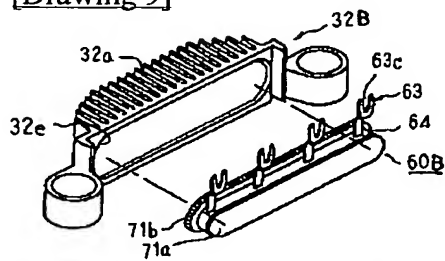
60A : ダイオードパッケージ

70b : 負極側ベース

[Drawing 12]

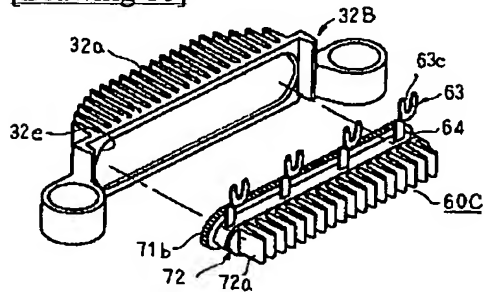


[Drawing 9]



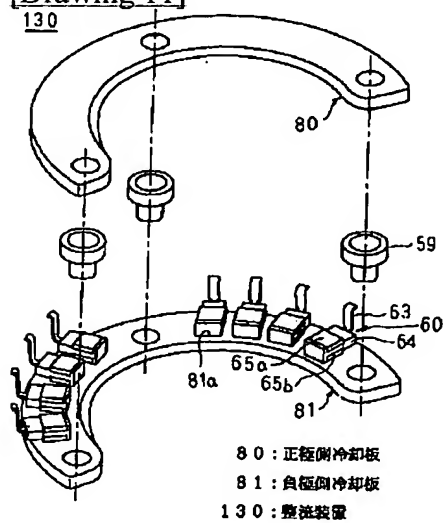
32B : 負極側冷却板 71a : 正極側ベース
60B : ダイオードパッケージ 71b : 負極側ベース

[Drawing 10]



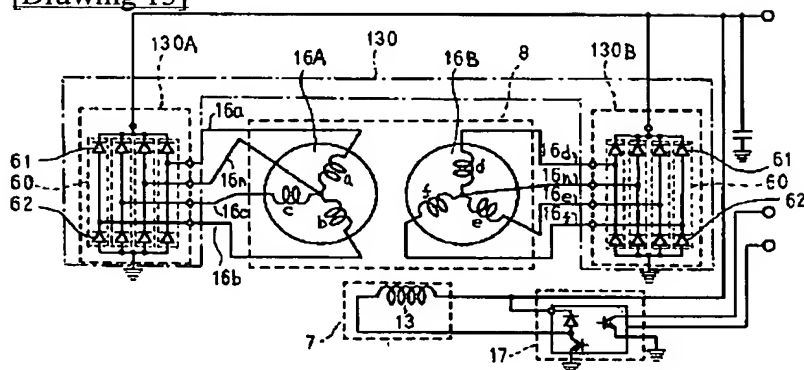
60C : ダイオードパッケージ
72 : 正極側ベース
72a : 放熱フィン

[Drawing 11]

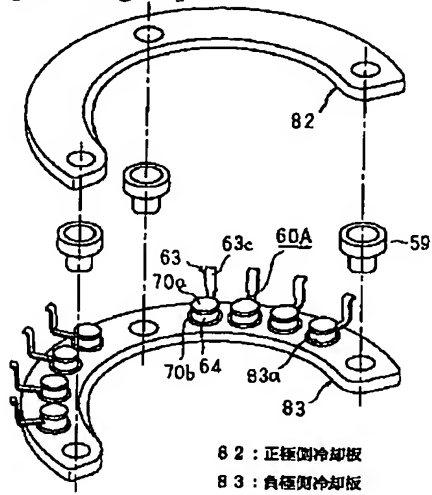


80 : 正極側冷却板
81 : 負極側冷却板
130 : 整流装置

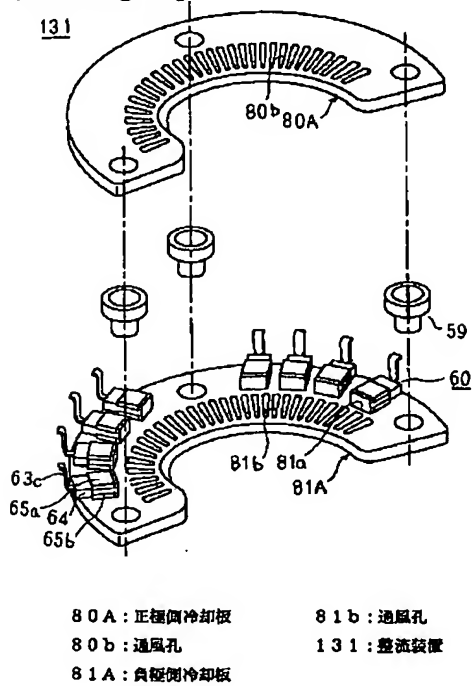
[Drawing 13]



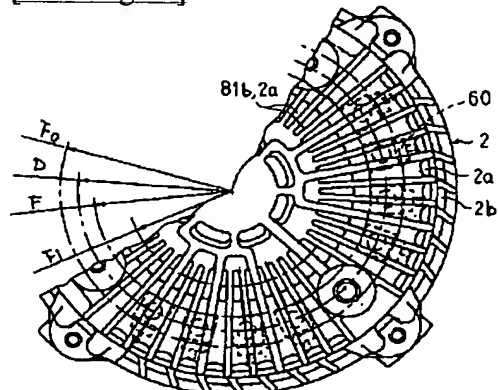
[Drawing 14]



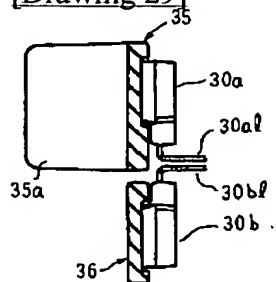
[Drawing 15]



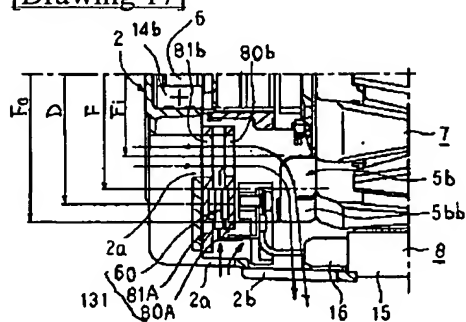
[Drawing 16]



[Drawing 29]

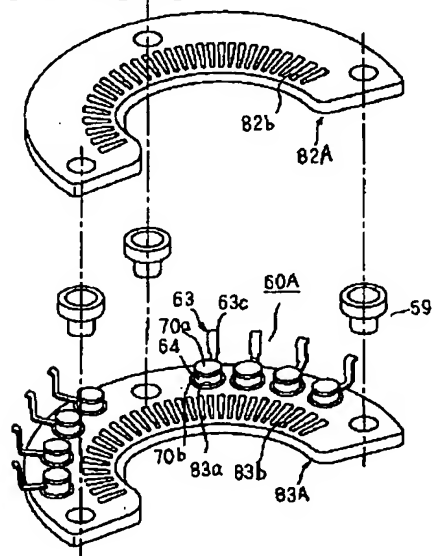


[Drawing 17]



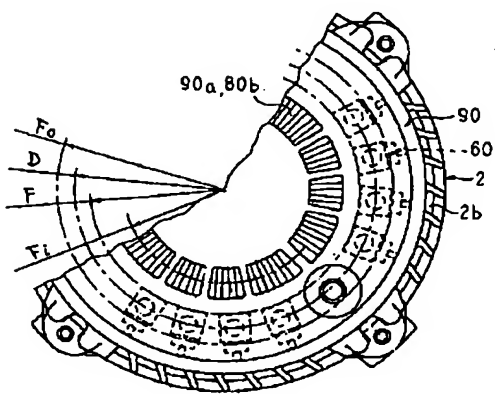
2 : リヤブラケット (ケース) 5b : 軸流ファン
2a : 吸気孔 8 : シャフト

[Drawing 18]

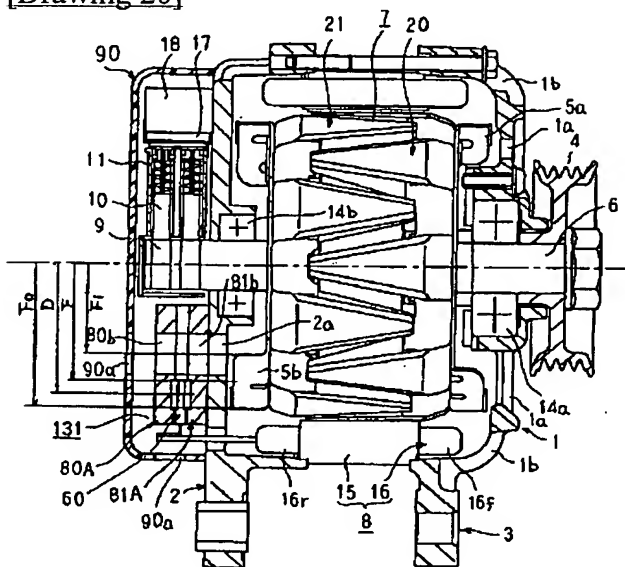


82A : 正極側冷却板 83A : 負極側冷却板
82b : 通風孔 83b : 通風孔

[Drawing 19]

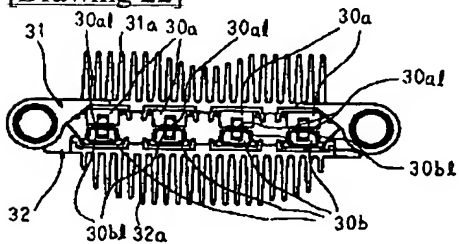


[Drawing 20]

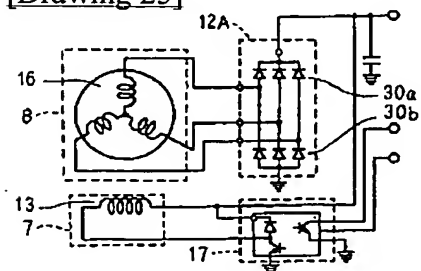


1: フロントブラケット
3: ケース
80: カバー (ケース)
90a: 吸気孔

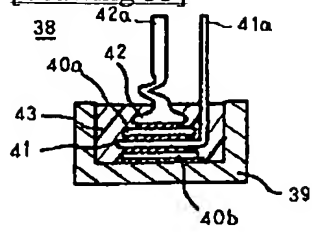
[Drawing 22]



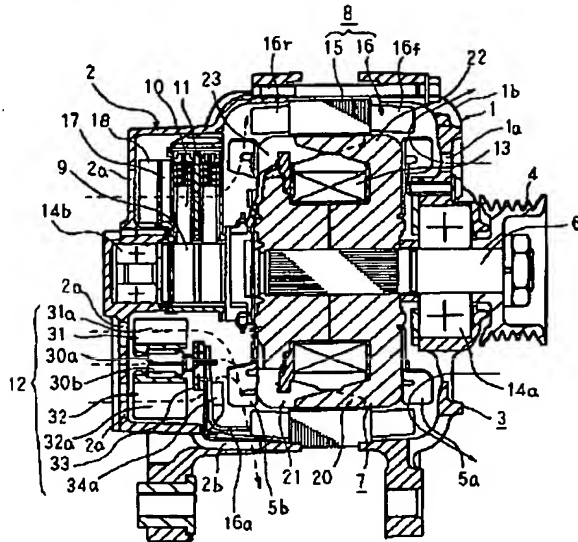
[Drawing 25]



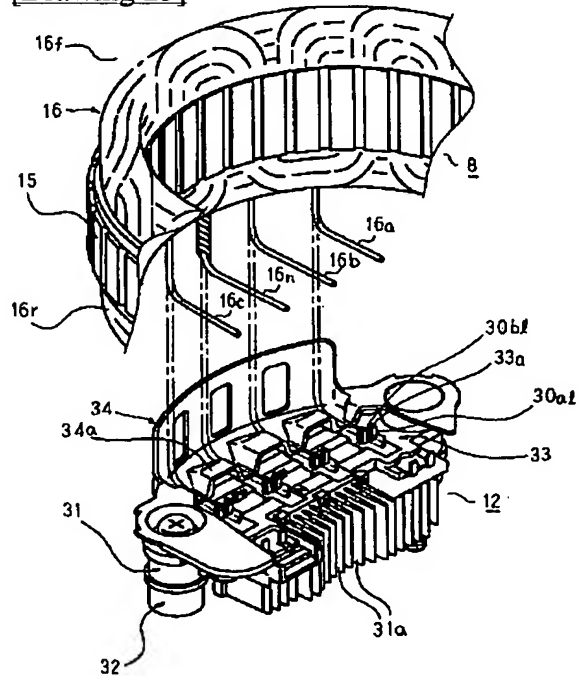
[Drawing 33]



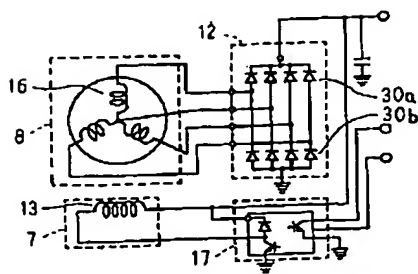
[Drawing 21]



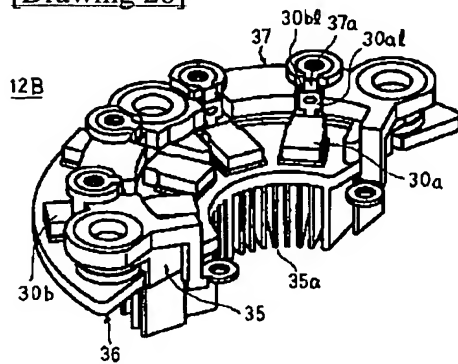
[Drawing 23]



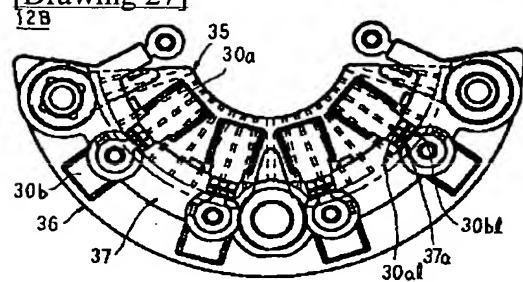
[Drawing 24]



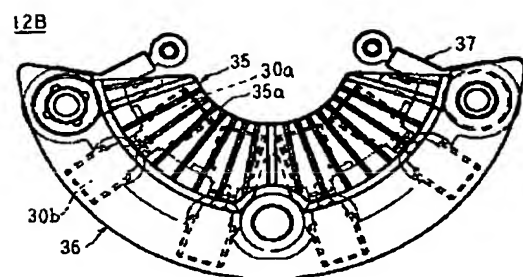
[Drawing 26]



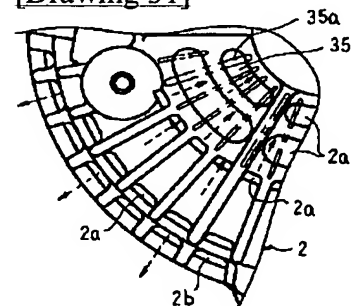
[Drawing 27]



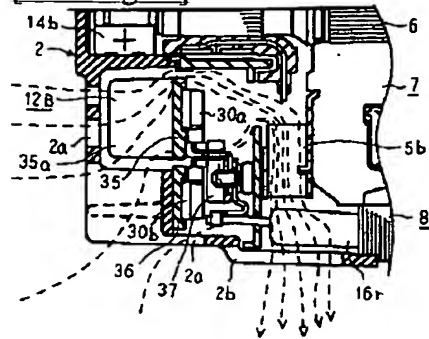
[Drawing 28]



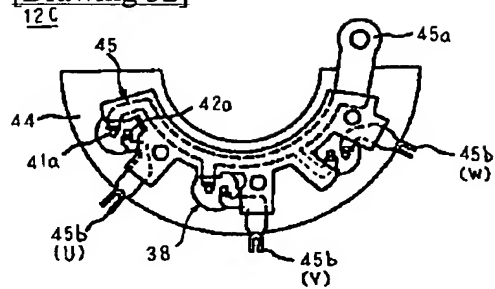
[Drawing 31]



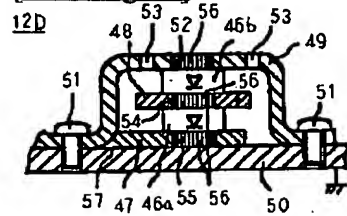
[Drawing 30]



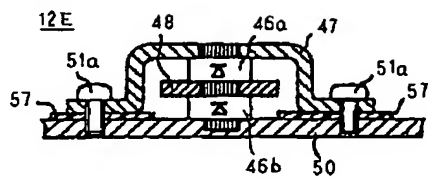
[Drawing 32]



[Drawing 34]



[Drawing 35]



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